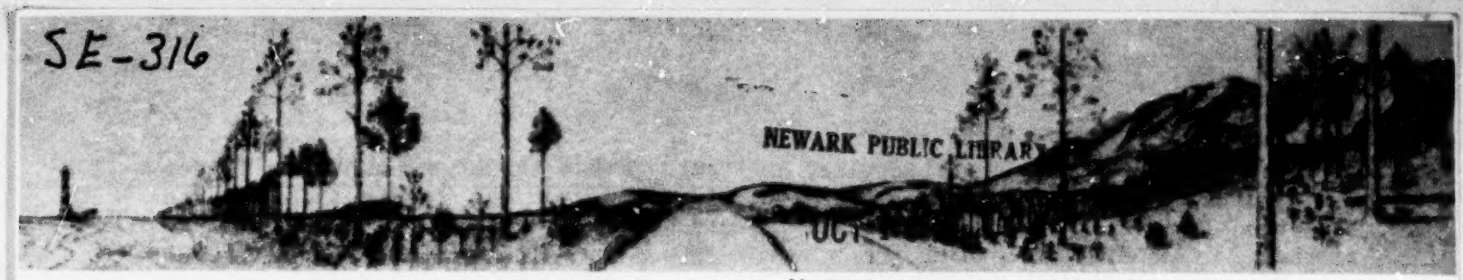

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Prescribed Burning on Large Landholdings in the South During 1975

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Abstract.--Approximately 1.85 million acres of commercial timberland in large private and Federal holdings were prescription burned in the South during 1975. At least an additional 298,000 acres of wild land were burned for wildlife habitat and range improvement. Thus, in excess of 2.15 million acres of total wild land (timberland plus other wild land) was prescription burned on large landholdings in the South during 1975. This total does not include any prescription burning on small landholdings. Private industry burned 1.27 million acres, 40 percent for site preparation.

Keywords: Fire management, site preparation, fuel reduction.

Prescribed burning has long been a common treatment on forest land in the South, but the acreage treated has been unknown because no uniform system exists for reporting prescribed burning activity in most states. This Note reports the results of a survey of managers of large forest-land holdings. Managers were asked to give the acreage burned and the purpose of burning. Since most such treatments are done on large holdings, the data reported here represent a large but unknown percentage of all prescribed burning in the South.

Planners need this information to estimate the location and amount of smoke emissions in the region and to determine the portion of fire-prone area being protected annually by prescribed fire.

SAMPLING METHODS

Information on area managed, extent of prescription burning, and purpose of burning in the South during 1975 was gathered in three ways, depending on what was already published and how easily land managers could be contacted.

The acreage of commercial forest in the National Forest System and in private industry holdings was obtained from a published report.[2] Prescribed burning statistics for National Forests were obtained from agency accomplishment reports.[3] Land managed and prescribe burned by other Federal agencies in the South, such as the Departments

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[1]Research Foresters, Fire Science Project, Macon, Georgia, and Utilization of Southern Timber, Athens, Georgia, respectively.

[2]U.S. Department of Agriculture, Forest Service. Forest statistics of the U.S., 1977. Washington, DC: U.S. Department of Agriculture, Forest Service; 1978. 133 p.

[3]U.S. Department of Agriculture, Forest Service. Forest Service accomplishment report for National Forests in Region 8 during fiscal year 1976 (July 1, 1975- June 30, 1976. Washington, DC: U.S. Department of Agriculture, Forest Service; 1976.

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of Defense, Fish and Wildlife Service, and National Park Service, was acquired by personally contacting the individual in charge of each major holding.

Data on burning by private industry in the South were obtained by sending a questionnaire to a sample of 230 land managers in 11 Southern States. Requested information included: (1) acres of forest land being managed, (2) total area prescription burned in 1975, and (3) area burned for site preparation. Kentucky and Oklahoma, often considered Southern States, were excluded because prescribed burning is not widely practiced in those States.

Burning on small private ownerships was excluded from this assessment. Reliable information for this ownership group is not available and will not become so until reporting systems similar to those now in effect in Florida and North Carolina are initiated in the other states.

AREA IN LARGE HOLDINGS

In 1975, the 11 States contained 184,107,000 acres of commercial forest land. Approximately 26 percent of this acreage was in large Federal or forest industry holdings (table 1). Private industry managed some 18.9 percent of the commercial forest acreage. National Forests were a distant second in area managed with 5.8 percent.

PRIVATE INDUSTRY PRESCRIPTION BURNING

There were 76 responses to the questionnaires sent to private industry with at least one response from each of the States sampled (table 2). Respondents collectively managed about 10-3/4 million acres of timberland, which is about 31 percent of all industry-managed land in the South. Sample size, based on fraction of industry land accounted for in the sample, ranged from 4.7 percent in Florida to over 60 percent in Georgia, South Carolina, and Tennessee. By extrapolating the acreage prescription burned in each State, based on the sample received, a total of 1,273,600 acres was estimated for industry in the 11 sampled Southern States.

More than two-thirds of the prescription burning identified in the study was done by forest industry,

Table 1.--Large commercial forest-land holdings in the Southern States in 1977

State	All commercial timberland[a]	Large ownership groups						
		National Forest[a]	Department of Defense[b]	Fish & Wildlife Service[b]	National Park Service[b]	Private industry[a]	Total	
	Thousand acres							Percent
Alabama	21,331	617.8	100.13	--	--	4,204.9	4,922.8	23.1
Arkansas	18,207	2,413.7	--	--	--	3,950.7	6,364.4	35.0
Florida	15,330	1,005.3	521.82	94.8	20	5,318.6	6,960.5	45.4
Georgia	24,812	812.6	469.30	429.0	--	4,318.2	6,029.1	24.3
Louisiana	14,527	559.6	63.23	--	--	3,761.4	4,384.2	30.2
Mississippi	16,892	1,122.0	6.30	46.8	--	2,505.1	3,680.2	21.8
North Carolina	19,562	1,028.8	216.46	--	--	2,134.8	3,380.1	17.3
South Carolina	12,176	572.8	50.33	45.6	--	2,006.9	2,675.6	22.0
Tennessee	12,820	578.7	--	--	--	1,121.4	1,700.1	13.3
Texas	12,512	595.0	33.94	--	--	3,771.1	4,400.1	35.2
Virginia	15,939	1,424.0	83.68	--	--	1,669.6	3,177.3	19.9
Total	184,107	10,730.3	1,545.19	616.2	20	34,762.7	47,674.4	--
Percentage of commercial forest land	--	5.8	.8	.3	0	18.9	--	25.9

[a] U.S. Department of Agriculture, Forest Service. Forest statistics of the U.S., 1977. Washington, DC: U.S. Department of Agriculture, Forest Service. 1978. 133 p.

[b] Data derived from personal inquiries, 1980. On file: Ragnar W. Johansen, Southern Forest Fire Laboratory, Macon, Georgia.

Table 2.--Summary of prescription burning by private industry during 1975

State	(1) Questionnaire respondents	(2) Timberland managed by respondents	(3) Area prescription burned	(4)	(5) Total industry area[a]	(4) × (5) Extrapolated industry area prescription burned	(2) ÷ (5) Fraction of industry land sampled
	Number	M acres	M acres	Percent	M acres	M acres	Percent
Alabama	8	1,064.3	24.3	2.28	4,204.9	95.9	25.3
Arkansas	3	895.0	30.0	3.35	3,950.7	132.3	22.6
Florida	1	250.0	16.8	6.72	5,318.6	357.4	4.7
Georgia	22	2,607.1	37.1	1.42	4,318.2	61.3	60.4
Louisiana	17	1,412.1	131.6	9.32	3,761.4	350.6	37.5
Mississippi	2	874.8	25.6	2.93	2,505.1	73.4	34.9
North Carolina	7	868.5	28.8	3.32	2,134.8	70.9	40.7
South Carolina	8	1,215.0	34.0	2.80	2,006.9	56.2	60.5
Tennessee	2	694.0	19.5	2.81	1,121.4	31.5	61.9
Texas	1	524.0	2.7	.52	3,771.1	19.6	13.9
Virginia	5	369.0	5.4	1.47	1,669.6	24.5	22.1
Total or average	76	10,773.8	355.8	3.3	34,762.7	1,273.6	31.0

[a] U.S. Department of Agriculture, Forest Service. Forest statistics of the U.S., 1977. Washington, DC: U.S. Department of Agriculture, Forest Service. 1978. 133 p.

which burned 3.7 percent of its forest land in 1975 (table 3). Considerable land on National Forests and 200,150 acres of military timberland were burned. This area represents 13 percent of commercial timberland on military reservations. Most burning there was done to reduce hazardous fuel buildup, and the trend on military reservations is toward increasing hazard-reduction burning. Based on actual prescribed-burning records from Federal lands and estimates made from industry respondents, approximately 1,855,000

Table 3.--Commercial timberland prescription burned in the South during the 1975 burning season, by ownership

State	National Forest[a]	Department of Defense	Fish & Wildlife Service	National Park Service	Forest industry	Total
	Thousand acres					
Alabama	38.80	22.65	--	--	95.87	157.32
Arkansas	9.78	--	--	--	132.35	142.13
Florida	71.71	35.94	3.5	1.4	357.41	469.96
Georgia	5.28	77.54	11.5	--	61.32	155.64
Louisiana	69.04	6.82	--	--	350.56	462.42
Mississippi	89.75	.80	3.1	--	73.40	167.05
North Carolina	6.72	32.24	--	--	70.88	109.84
South Carolina	43.53	11.82	2.3	--	56.19	113.84
Tennessee	.19	--	--	--	31.51	31.70
Texas	23.73	4.26	--	--	19.61	47.60
Virginia	.64	8.08	--	--	24.54	33.26
Total	359.17	200.15	20.4	1.4	1,273.64	1,854.76
Burned fraction (percent)	3.3	13.0	3.3	7.0	3.7	--

[a] U.S. Department of Agriculture, Forest Service. Forest Service accomplishment report for National Forests in Region 8 during fiscal year 1976 (July 1, 1975-June 30, 1976). Washington, DC: U.S. Department of Agriculture, Forest Service. 1976.

acres were prescribe burned on all large commercial timberland holdings during the 1975 burning season.

Extensive burning also takes place on other than commercial forest land. Martin[4] estimated that 106,110 acres were burned for range improvement and 192,000 acres to improve muskrat trapping in Louisiana alone. Marshland burns were also prescribed in the Everglades National Park, and in other places unknown to the authors. Total forest and other wild-land burning therefore exceeded the 2.15 million acres reported here for 1975.

EXTENT OF SITE PREPARATION BURNING

Of the various types of burns that can be prescribed on forest areas, site preparation burning is usually the most severe, because fuel loadings are usually heavy and burning is done when the fire will be sufficiently intense to maximize fuel consumption.

In Tennessee, Texas, and Virginia almost all of the burning was for site preparation (table 4), and this type of burning accounted for a sizable proportion of the total in most of the other States. Over 40 percent of prescription burning reported by private industry was for site preparation.

Of particular interest is the fraction of site preparation burns in which logging debris has been piled before burning. When debris is properly piled and burned, much of the large material that would remain after a broadcast burn is consumed. However, because more material is consumed, smoke emissions are increased. Smoldering combustion is also increased, and its attendant particulate production is greater than that for flaming combustion.[5] In 1975, nearly one-third of the site preparation burns were conducted with piled debris.

Table 4.--Site preparation and other industry-conducted prescription burning in 11 Southern States during 1975

State	Site preparation burning			Other burning	Total burning
	Broadcast	Piled	Site preparation fraction		
	Acres	Acres	Percent	Acres	Acres
Alabama	10,852	48,437	61.8	36,582	95,871
Arkansas	8,823	17,647	20.0	105,879	132,349
Florida	170,195	--	47.6	187,214	357,409
Georgia	7,112	23,979	50.7	30,227	61,318
Louisiana	48,175	5,613	15.3	296,774	350,562
Mississippi	18,146	6,153	33.1	49,100	73,399
North Carolina	49,704	464	70.8	20,708	70,876
South Carolina	2,196	24,295	47.1	29,702	56,193
Tennessee	11,634	19,877	100.0	--	31,511
Texas	--	19,610	100.0	--	19,610
Virginia	24,376	--	99.3	167	24,543
Total or average	351,213	166,075	40.6	756,353	1,273,641

[4]Martin, Robert E.; Cooper, Robert W.; Crow, A. Bigler. Final report of the task force on prescribed burning. Unpublished draft on file: Bend, OR: Robert E. Martin, Silvicultural Laboratory, Pacific Northwest Forest and Range Experiment Station; 1976.

[5]Ryan, Paul W.; McMahon, Charles K. Some chemical and physical characteristics of emissions from forest fires. In: Proceedings 69th annual meeting of the Air Pollution Control Association; 1976 June 27- July 1; Portland, OR: Pittsburgh, PA: Air Pollution; 1976. 21 p.

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